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AUTHOR	Casteen, John T., III
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ABSTRACT

Perspectives concerning the need to reform high school and college curricula and college admission standards are considered. Until the early 1960s, most U.S. colleges offered a traditional curriculum in the lower division, with emphasis on certain skills, such as writing and arithmetic reasoning, and also on communicating certain basic cultural values. Beginning about 1960, the traditional curriculum was displaced by the general education curriculum, which allowed students to choose within broad rubrics what kind of competence they would develop in college. There was a general reaction against mathematics and science, and foreign language requirements disappeared in many schools. The core curriculum movement, which was influenced by developments at Harvard University, concentrates on specific and discrete skills that can be measured in reliable ways. The assumption is that the first year of study should be basically remedial, after which students should reach a level of competence that will allow them to advance to a complex second-year program that prepares students for a major program. There is a direct connection between this kind of curriculum and the efforts to reform the high school curriculum. The Southern Regional Education Board's views on the need for quality are presented in excerpts from "The Need for Quality," and the College Board's Project EQuality is described. The Board is trying to redefine the core academic competencies that ought to be taught in high school and construct an academic curriculum to prepare students for college. Additionally, the following concerns of legislators are discussed: higher education's role in improving the quality of high schools; and the validity of scholartic aptitude test scores. (SW)

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REGIONAL SPOTLIGHT
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Raising Academic Expectations

Reforming the School-College Curriculum

by John T. Casteen III

(This edition of Regional Spotlight *features a major excerpt from a presentation to the 1981 SREB Legislative Work Conference by Dr. Casteen, who is dean of admissions at the University of Virginia and an associate professor of English. He discusses the need to raise academic standards and performance in both the high school and college curriculum.)*

For many of us who have worked during the past decade to preserve college preparatory education in our public schools, 1981 has come to seem a point of light at what we hope is the end of the tunnel. The nation has known since 1976, when the College Board disclosed the Scholastic Aptitude Test (SAT) score decline, that something was amiss in our schools — that students nowadays do not typically read, reason verbally, or do arithmetic as well as students did in the mid-1960s.

School people have been especially alarmed to find this development, whose existence has been documented since 1976 in evidence other than SAT scores, coinciding with drops in school enrollments, with tightening public budgets, and with rising public doubts about schools and about the value of schooling.

For several reasons, 1981 is an important year. One of the reasons is that the Southern Regional Education Board (SREB) issued the report of its Task Force on Higher Education and the Schools, entitled "The Need for Quality." Although disarmingly brief, this document recommends some 25 actions to help solve problems that afflict our region's schools.

The SREB Task Force's factual findings are concise and (to me) persuasive. They match what I have learned in my work with our schools and colleges; and the recommendations are eminently sensible. In sum, the report seems to me to mark the beginning of a new awareness of the causes for our schools' decline, and a sound blueprint for action that lies within the means, financial and educational, of virtually any state, college, or school board.

My work deals most closely with the issues described in the report's recommendations on high school and college curricula and on admissions standards. The curriculum problems are basically those of defining coherent curriculum, making sure curriculum delivers measurable results, and seeing to it that those results have some immediate bearing on the kind of life that we want young people to pursue in this country. The concern about reforming curriculum today grows out of a sense that is now widespread in education — that the educational system in this country has not worked very well since about 1965, and that the time has come to undertake some basic changes with an eye toward improving the quality of what we do.

Recent Curricular History

It is no coincidence, in my opinion, that this decline began in the mid- and late-1960s when reformers announced that education was no longer relevant to the real world. The assertion was made that basic courses in mathematics, the sciences, the social sciences, foreign languages, and in other areas had in some way contributed to what was seen as America's moral decline. As you know, the reforms were in the direction of greater choice for students and of fewer courses in the core skills. The result of these changes began to be seen as early as 1967 in a measurable decline in the population's basic competence in reading, writing, and arithmetic.

It may be useful to realize that developments in curriculum revision have been systematic and not random. Until the early Sixties, most American colleges offered a traditional curriculum in the lower division, where students face course requirements in most colleges. This curriculum concentrated on certain skills, such as writing and arithmetic reasoning, and also on communicating certain basic cultural values, such as the corpus of American or British literature or the span of American or British history.

Beginning about 1960, and originating in the Ivy League colleges, the traditional curriculum was displaced by what has come to be called the "general

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education curriculum." In the "general education curriculum," a student has the right to choose within broad rubrics which kind of competence he or she will develop in the course of the college years. In the "general education" scheme, instead of facing a requirement in American history or British history, a student faces a general requirement in social sciences. A student is expected to master the social sciences by choosing perhaps to become an authority on one part of Colonial American History, rather than to address a broad survey course.

The "general education" scheme included such developments as the grouping together of mathematics and science in many college curricula, with the result that by about 1962 or 1963, students in most American colleges did not face separate requirements in mathematics and science, but instead faced requirements that combined the two disciplines; in effect, students chose either competence in mathematics or competence in science at the lower division in college.

The major curriculum reforms connected with the educational upheaval that went along with Vietnam began about 1967 or 1968, first on campuses with the most visible kinds of reaction, and especially on the campuses where there was violence. There was a reaction against the social sciences; separately stated history requirements all but disappeared from America's more selective colleges by the end of the 1960s. There was a general reaction against mathematics and science; the claim was that America had become a nation of technicians and that technicians were running America's foreign policy. It was believed on many campuses that we had to back away from the kind of technical concentration on mathematics and/or sciences that the general education curriculum involved.

Ironically, at the same time, there was also a reaction against foreign language study. I suspect that one reason may be that we were fighting a war in a part of the world where we had relatively little cultural experience. I checked in 1970 to see how possible it was for a student to complete a course in Vietnamese in an American college or university by surveying the entire catalogs of all the colleges that were accredited at that time. In a year when we had several hundred thousand Americans on the ground in Vietnam, I found only six colleges in the entire country where one could study Vietnamese and learn something about the culture in an academic sense. By the end of the Sixties, foreign language requirements had disappeared in about two-thirds of the colleges that had them in 1960. The belief was that the study of foreign languages was a discipline that should be pursued only by those who wanted an elite type of education.

The Core Curriculum

The next development — the one that's now in progress — has come to be called the core curriculum. It originated in several places, and I would not suggest that any one college or university faculty is responsible for it; but it is best known because of its adoption at Harvard University, under the direction of Henry Rosovsky, who is the dean of the faculty of Arts and Sciences at Harvard and who exerts an uncommonly strong influence on those of us who are concerned about school and college reform at this time. Rosovsky believed that Harvard's general education curriculum had been so substantially watered down and diminished in academic rigor by about 1978 or 1979 that the university had to readjust its expectations and redefine what it expected undergraduates to do if Harvard was to remain a major national university.

Consequently, a study commission of the Harvard faculty, with alumni and representatives of the university's various trustee councils, went to work on the question: What should students know by the end of the second year of study at Harvard? They recognized that college admissions officers rarely can deal with entirely reliable credentials from high schools. They looked at the facts that high school course descriptions are various, that high school grading schemes differ, that not all high schools mean the same thing by a course title, such as calculus, that most of us take to be fairly straightforward. Harvard concluded that it could no longer count on American high schools to deliver a product of more or less uniform academic preparation for the beginning of the freshman year of college.

Out of this dilemma came a curriculum which concentrates on specific and discrete skills that can be measured in reliable ways. The assumption is that the first year of study is, or ought to be, basically remedial; that by the end of the first year of study, all students should have reached a level of competence that will allow them to advance to a complex second-year program that prepares students for a major program. I won't try to recite Harvard's core scheme precisely, but I do want to give a general notion of how the core curriculum works, and try to give a sense of shape to this concept.

". . . colleges have hurt schools and schooling by demanding less of entering students."

In the first year of most core curricula, students are expected to develop a very high degree of competence in writing. All, or virtually all, students take a required writing course that concentrates on the basic skills and on the development of more complex communication skills requiring pretty serious thinking, revision, and editing. There are similar courses in mathematics, in foreign languages, and in the basic methods of the social sciences.

The framers of the core curriculum make very clear that they cannot pretend to teach all that we in the Western world know, and that instead what they can

teach in the first year of college are the basic methods — the writing, the computing, the reasoning in the social sciences, the skills involved in foreign languages — the methods that are crucial to further progress in college.

The standards at institutions that have adopted the core scheme are high. The expectations are dead serious. It's not simply that students must complete a math course; instead, students must achieve a very high level of competence in mathematics.

The second-year courses are applications of these first-year methods. In the second year of most core curricula, the courses include humanities, which might be literature or music; some course that will build on the methods mastered in writing and elsewhere in the first year; a course in the natural sciences. One problem in establishing the sequence of courses at the college level is that most high school graduates have not mastered mathematics to the degree necessary for them to do college-level chemistry, physics, or biology in the freshman year. Consequently, the Harvard scheme places the science courses in the second year, and says that before beginning the study of the natural sciences at the college level, students must pursue mathematics to a level high enough to give them the skills necessary to succeed in college-level science courses. By the same sort of reasoning, a course in foreign civilization, emphasizing the economics and basic cultural experience, is required.

Harvard also requires a course on how to make and form moral choices. One of the Harvard faculty's concerns was the fairly high number of its graduates represented in the Watergate scandal. There was, I think, at one time a reaction in which some of the Harvard community believed that Harvard was in some way responsible for Watergate. I think the faculty has pretty much reconsidered that, and has looked at the simple coincidence of the number of Harvard graduates in visible places in public life. The faculty appears to have come to see it not so much as a moral crisis, but as an opportunity to exert some real leadership in the world by teaching basic ethical or moral systems to second-year college students who have previously mastered those four basic skills described in the freshman level.

One other observation about the second-year sequence is that the sophomore courses put together the skills mastered in the freshman year. The mathematics course may well be directly applicable to the requirement in a foreign culture if the course is to be foreign economics. The courses in writing clearly have impact on any second-year level course, and the broad purpose of the lower division, as now defined, is to give students a fairly high degree of skill and, at the same time, advanced experience in more complex problems as background to the required major concentration of the two final years of college.

Rosovsky's formulation of the two final years is that they should impart some cumulative knowledge in depth. The expectation is that any graduate of a core curriculum ought to be a reasonably respectable expert in some substantive area. The tie between this kind of curriculum and the efforts to reform the high school curriculum is in some ways quite direct.

John T. Casteen III

A New Brand of Accountability

The public must demand of colleges that a kind of accountability develop in a place where relatively little has been required in recent years. That accountability has to include measurable results. Colleges must demonstrate that the curriculum — especially in the lower division, which is the cutting edge of the curriculum — exerts an influence on students; students must be different after graduation than they were before, and that difference must be measurable in terms of basic educational competency.

Rosovsky is fond of giving out two truisms to describe the way curriculum ought to work. One is that "people don't know what they don't know." To me that makes a good bit of sense. Students are not able to predict what they do not know until they know it, and then they know what they didn't know before they knew it. The second observation that he makes is that "people can't choose between choices they don't understand." That, too, makes perfectly good sense to me. For example, students who have not mastered a fairly high level of mathematics clearly cannot choose between chemistry and physics. Students who have not learned to write effectively clearly cannot make good choices in the humanities areas.

Each truism implies much about the nature of schooling, and much about why we have fallen behind. In a nation where only one of seven high school students pursues foreign language study, where advanced placement English must compete for money and students with "Enjoying the Cinema," "Responsible TV Viewing," and "Forms and Contrasts" (all three are course titles culled from transcripts that were on my desk on Friday of last week), no one should be surprised that test scores decline; that colleges and employers complain that students are deficient in reading, writing, and arithmetic; or that in world trade and in applied research we now lag behind Germany, Japan, and Russia, which do for 80

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Questions and Answers

In the discussion period that followed his presentation, Dean Casteen was asked by legislators to expand on a number of points. Here are some comments from that discussion.

QUESTION: Does higher education have a responsibility in improving the quality of education in our high schools?

ANSWER: Many of us have grown increasingly concerned about the quality of high school education. And here I think the SREB report has said something that had to be said: what goes on in high school is a direct reflection of what goes on in college. College admission standards and college graduation standards influence high school curriculum in a very direct way.

For example, in California an analysis was made of the relationship between the Univeristy of California's published admissions requirements, the courses required in high school, and the average course program undertaken by students. That study reached the same conclusion as the SREB task force. That is, each time the University of California lowered its standards, saying that the reason was that California's high schools weren't doing the job well enough, the high school students began to take less, so that the average program undertaken in the high schools lags about two years behind a declining trend in the university. I use that example because California has probably the strongest state university system in this country; if that problem is as serious in the best that we have at the college level in public education, I am appalled to think what it must be with the rest of us.

QUESTION: Why don't educators themselves insure that high standards of performance are enforced up the entire academic ladder?

ANSWER: I think there are a lot of different reasons. One is that in an era of rapidly expanding student populations, those of us who teach in the major universities can become extremely comfortable. An expanding student population pretty much guarantees that we can put our time into upper-division and graduate teaching as well as research, and that we can do so with the blessing of the entire establishment.

In a time of contraction, which is in fact now the case on some campuses, economic forces begin to come to bear on us. Frankly, we are going through a period of self-scrutiny and a fair amount of internal strife. My belief, that external forces — that is, external to the education establishment — have to come to bear on this question, grows in part out of frustration that my colleagues do not, in fact, want to go back to teaching freshmen and sophomores.

A world in which instructors and graduate instructors do the bulk of the teaching at the lower division is a happy world for most academics at my level and above. However, that presents a problem — you have relatively little control over what goes on in a graduate student's classroom. He or she may be a superb teacher; many of them are. On the other hand, there is little continuity; you don't have the year-in, year-out interaction that goes toward building for stronger programs. And, you have very little accountability, because the simple solution to a bad graduate student is to wait until he or she graduates. So, what you've done is place that person in someone else's classroom and the process of teaching that one would hope would grow in the graduate teaching area really hasn't occurred.

QUESTION: Efforts to improve quality seem to be occurring primarily at institutions which are already thought to be some of the best. Will these efforts extend throughout higher education or end with the best getting better?

ANSWER: I think what's happening right now in most of our institutions is that we are jogging in place to see which way the traffic is going to go. The reforms at the University of North Carolina at Chapel Hill are crucially important. Because Chapel Hill is an academically strong statewide institution that draws students from across state lines, it can have an impact on education in the South by developing a curriculum that is an appropriate public model of the kind of reform at Harvard.

It's important to bear in mind that faculty members at most less prestigious institutions are very nervous. The last 10 years have been good years, especially in terms of our ability to attract students from outside the region and boost our enrollments and revenues. There is a big influx of students, even today, into Southern colleges and universities and, in fact, we are the only region in the country showing total enrollment growth in public or private schools. The problem is that, as we all know, the bubble is about to burst.

Academic accountability in public colleges has often been different from what it has been in the very best private colleges. By and large, the public has not demanded that public education be really good. We have passively accepted the notion that the presence of a Duke, or an Emory, or a Tulane within a given region of the country excused public higher education from being really excellent. Now in recent years, counter models in the public sector have developed in the South, such as at Chapel Hill, Austin, and Charlottesville — all superb national universities that operate out of a public base.

I suspect strongly that excellence will move increasingly into public schools. No one questions that

Chapel Hill and other institutions currently doing a very serious curriculum review, such as the University of Texas at Austin, will not only survive, but will thrive, because they are the best in the region. Notwithstanding that we know that, most college faculties are simply very, very nervous about looking at reform.

QUESTION: Isn't it true that serious questions are being raised these days about the actual validity of the SAT scores?

ANSWER: It might be useful to have a little bit more of a practitioner's view of that whole controversy. The SAT is basically three things.

The verbal score is a measure of reading speed, accuracy, and comprehension as measured by giving students passages to read and then asking them what the passages said within a tightly controlled time period. Reading speed is a perfectly measurable and finite thing. We have been doing it for years, so measuring the reading speed is itself a perfectly valid thing to do.

There are measures of verbal reasoning that are designed to see how accurately students can separate themselves from the argument advanced by a writer and determine on their own whether the argument is true, or valid, or whatever else may be there.

Then there's a measure of mathematics revealed in the math score; that score is a measure of speed and accuracy in calculation and ability to spot mistakes. The level of math command required for the SAT is algebra I, plus the basic concepts of geometry — there is no advanced mathematics in it.

Now, a couple of observations about the controversy over these tests: First, there was no controversy until 1976, when the College Board revealed that test scores had been declining since 1967. Second, there are ample studies based on all kinds of evidence to show that, in fact, students do read and write and do arithmetic less efficiently now than they did in the mid-Sixties, when a lot of money from the National Science Foundation and other agencies went into public education.

Third, it is often argued that "non-mainstream," which is to say non-white, middle-class students, do less well on these tests and, therefore, that those students are discriminated against by the nature of the test. Well, in fact, there is a difference in scores, but I think it has much to do with the academic programs actually completed by the high school students from "non-mainstream" backgrounds.

For example, the State Council of Higher Education for Virginia has commissioned two studies that deal with the disparity in the eighth or ninth grade between what typical black and white youngsters study in high school. That difference, I suspect, says a lot about the difference in the test scores. Populations of different races that have taken identical course programs show very little difference in the test score results, if the level of success in the courses is comparable.

Fourth, the attack on the test scores originated with the National Education Association, which has alleged that test scores are used punitively against teachers, and with Ralph Nader, who has contended that the tests are used to keep students out of programs. Historically, it is easy to demonstrate that, in fact, test scores have had a lot more impact on getting students into programs than shutting them out; before tests were developed, the average graduate of a typical public high school, in the South especially, had virtually no chance of attending a Harvard, or a Yale, or a Williams.

More recently, the test score provided a comparable measure of reading, writing, and arithmetic that could be used. Most of the complaints about tests have not come from minority communities. In fact, minority educators — starting with Steve Wright, who was President of Fisk and the United Negro College Fund, and working right down the list — have generally agreed that reading, writing, and arithmetic ought to be measurable skills. If you measure them, then you should be able to use the measurement in order to evaluate, first of all, how well you've done in high school with any student, and second, what kind of success you can predict for college.

Finally, many admissions offices use what are called "regression equations" to evaluate the worth of any given admission credential. For example, we do a study of high school class rank. We don't use grade-point average because schools have an infinite number of ways of indicating it. We use the academic content in the transcript; we count the number of college prep courses in the junior and senior years, and see what that tells us. And, we use the test scores.

As grading standards softened, perhaps grew more subjective, and as it became the case that virtually any decent looking and reasonably diligent student could wind up in the top 10 or 15 percent of the class, an odd thing happened: in the regression equation, test scores suddenly developed more value. That is, they had a higher predictive validity than did the equation run on high school rank. Ironically, at the time when the credibility of test scores was being attacked, they gained in validity on the basis of cold statistical history. We saw this trend in our population, which is 55,000 test scores a year that eventually filter down to 2,500 freshmen a year.

My guess is that the problem with college entrance tests is that they are a fairly universal measure of some things that people don't like to face, such as the fact that kids don't read as quickly as they ought to. A better response to this problem might be to say, "OK we've got a problem; now let's start looking at how we can deal with it."

The Need for Quality

Here are excerpts from "The Need for Quality," the report of the SREB Task Force on Higher Education and the Schools:

"The region's immediate challenge is to implement minimum standards across the board, in each state, be they for high school graduation or for employment of teachers. More important, the region should seek to achieve during the Eighties substantial improvement of academic standards above these minimum expectations . . . ."

"An essential issue linking high schools and colleges is the necessity to redefine the content and raise the standards of the college preparatory curriculum. . . . The general preoccupation with minimums or floors of competency characterizes colleges as well as the high schools . . . .

"Slackened admission standards by colleges that no longer require a foreign language, a rigorous mathematics-science sequence, or evidence of what the applicant's class standing is, send no signals to high school students that academics are important . . . .

"In the long term, the need for remedial education at the collegiate level should be reduced substantially by measures at elementary and secondary levels to improve student performance . . . .

"In the short term, greater emphasis on scholastic standards by colleges may create difficulties for marginal students . . . . Thus, a general affirmation to higher quality demands that greater attention be given to effective means of providing remedial education."

"To improve quality in the curriculum, the following recommendations are provided:

† The state boards of education and higher education in each state should establish a joint committee to consider concerted action to establish and raise standards for the high school curriculum and for the general education component of higher education.

† The state boards of education should examine the offerings of high schools for the purpose of strengthening the major field requirements, preventing the acceptance of peripheral courses to count for major subject requirements, and recommending repeal of legislatively mandated courses outside the major subjects.

† The higher education board in each state should seek simultaneous action by the colleges and universities to raise admission standards. The private colleges should be invited and encouraged to participate in this general move.

† The state boards of education and higher education in each state should appoint a joint committee to examine remedial education provided within their state, for the purpose of determining the most effective settings and models to serve the needs of insufficiently prepared high school graduates."

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percent of their high school students what we do for only 40 percent of ours.

A third truism, my own, may be useful to persons concerned about declining SAT scores: "People don't test well on what they don't know." One might add this corollary: "People don't do well what they do not know how to do." Or even this axiom: "People don't know what they have not learned." Furthermore, by and large, "people don't know things they haven't been taught" — which is to say that faculties who choose not to teach the basic courses to a fairly high level of complexity are guaranteeing that their students will not be able to make good choices. Defending the core curriculum against the charge that it was merely another effort to return to the "basics," Harvard sociologist Christopher Jencks made the observation that what American schooling lacks is not the basics, but the complexities that make for mature learning, mature citizenship, or adult success. I think that complexity is coming back into our schools, complexity of a new and special kind that will prepare our students better than anything that we have seen before.

Project EQuality

In addition to the SREB call for improved academic standards, a second program of school reform has been advanced in 1981 — Project EQuality, with both the "E" and "Q" capitalized, is a national effort sponsored by the College Board with financial support from the Ford Foundation and the Minnie Stevens Piper Foundation.

In this project, the College Board is trying to redefine the core academic competencies or skills that ought to be taught in high school, and then to construct on these skills an academic curriculum for public or private schools that represents fairly what students ought to know before entering college.

The College Board, as did the SREB Task Force, recognized that many causes for declining academic quality lie outside the schools' purview: the rising divorce rate and related rise in the number of children growing up in single-parent households; increased exposure to television; the loss of national purpose following Vietnam and Watergate. Both groups also agreed that these problems did not excuse school and college educators and political leaders from making changes that are clearly within their purview. The College Board panel pointed to the proliferation of elective courses in competition with core academic courses; the growth of non-academic alternatives within the curriculum (driver education, vocational education, family life education, consumer education, and the like); a general lack of coherence in the curriculum; and students' failure (perhaps inability) to pursue the most advanced or rigorous courses in the final year or two of high school.

Project EQuality calls for rigorous programs to insure that students acquire competencies or skills in six major areas: reading, writing, speaking and listen-

ing, mathematics, reasoning, and studying. In each area the project describes specific skills that students ought to master by the tenth grade if they intend to go on to college. (Here I should interpose a bias of my own that differs from the College Board's position: I think that these competencies ought to belong to all high school sophomores or juniors whether or not they are college-bound; to deprive the non-college-bound student of them seems to me is to deprive him or her of the tools necessary for success in the modern world.)

". . . what American schooling lacks is not the basics, but the complexities . . ."

I want to discuss two of these competencies in detail as a way to show the scope of this effort. Under "studying," there is this statement:

Studying Competencies

This set of abilities is different in kind from those which precede it. They are set forth here because they constitute the key abilities in learning how to learn. Successful study skills are necessary for acquiring the other five competencies as well as for achieving the desired outcomes. Students are unlikely to be efficient in any part of their work without them.

One further difference must be expressed: Activities related to acquiring the basic competencies will fail unless students bear in mind the role of their attitude in the learning process. That attitude should encompass a sense of personal responsibility for one's own progress; a desire to make full use of the teacher as a resource; and a willingness to conduct themselves in ways that make learning possible for their classmates as well as themselves.

- † The ability to set study goals and priorities consistent with stated course objectives and one's own progress, to establish surroundings and habits conducive to learning independently or with others, and to follow a schedule that accounts for both short- and long-term projects.
- † The ability to locate and use resources external to the classroom (for example, libraries, computers, interviews, and direct observation), and to incorporate knowledge from such sources into the learning process.
- † The ability to develop and use general and specialized vocabularies, and to use them for reading, writing, speaking, listening, computing, and studying.
- † The ability to prepare for various types of examinations and to devise strategies for pacing, attempting or omitting questions, thinking, writing, and editing according to the type of examination; to satisfy other assessments of learning in meeting course objectives, such as laboratory performance, class participation, simulation, and products of students' evaluation.
- † The ability to accept constructive criticism and learn from it.

And under mathematics, this statement appears:

Mathematical Competencies

- † The ability to perform, with reasonable accuracy, the computations of addition, subtraction, multiplication, and division using natural numbers, fractions, decimals, and integers.
- † The ability to make and use measurements in both traditional and metric units.
- † The ability to use effectively the mathematics of:
  - integers, fractions, and decimals
  - ratios, proportions, and percentages
  - roots and powers
  - algebra
  - geometry
- † The ability to make estimates and approximations, and to judge the reasonableness of a result.
- † The ability to formulate and solve a problem in mathematical terms.
- † The ability to select and use appropriate approaches and tools in solving problems (mental computation, trial and error, paper-and-pencil techniques, calculator, and computer).
- † The ability to use elementary concepts of probability and statistics.

I do not believe that we now teach competencies or skills on this order to our average tenth or eleventh grader; yet I believe that we must. The average high school graduate today drops out of science and math after about two years. In our part of the country, the average high school program in mathematics is actually slightly less than two years, and the average graduate has not mastered algebra. Every major study of recent academic progress shows that students now attempt less in school than they used to or than they should. The SREB Task Force implies this judgment when it asserts that colleges have hurt schools and schooling by demanding less of entering students.

Studies carried out by Michael Kirst, a former president of the California State Board of Education and a Stanford professor, reinforce this judgment. Kirst shows that reductions in the University of California's entrance requirements have led to reductions in the average course program completed by California's high school students.

I have worked this summer and fall with teachers in Virginia, Texas, Pennsylvania, and recently in Alabama on the feasibility of using the Project EQuality formulations as bases for school programs.

The reaction is remarkably positive; not because faculty members believe this is something revolutionary, but because they find in this type of formulation a careful listing of what students ought to be able to do — a listing made up in terms that teachers can themselves evaluate. It is not a program that calls for the development of a new national testing scheme, in fact, it's not tied to a testing scheme at all. Instead, it's a way of describing in perfectly pragmatic layman's terms what people ought to be able to do at the end of high school.

Project EQuality is now working on the elaboration

of the basic academic curriculum that is built on these competencies. In many respects, it resembles the best that our schools now offer. It differs in that it intends to enroll not the 15 or so percent of students who now complete genuinely rigorous high school programs (the statistic is my own), but roughly the 60 or 65 percent who go on to college, and hence ought to master complex subjects in high school.

Many of the proposed course descriptions or academic area descriptions resemble the advanced placement programs that now exist in most Southern states. Others, such as the proposed courses in visual and performing arts, may resemble courses offered in some schools, but differ in that Project EQuality is proposing that virtually all schools address them as serious academic topics.

In mathematics, the project will probably recommend two levels of competency, one developed from the combination of algebra I-geometry-algebra II-trigonometry that many of us completed as college preparation. The other advanced model provides for students to go through pre-calculus or an introductory calculus course at the end of high school, and is designed for students who will go either to more selective colleges, or to engineering or technical schools. When one considers the importance of mathematics in a world that runs on computer time and the anomaly that our average high school graduate now completes slightly less than two years of high school mathematics, the need for this kind of mathematics program grows painfully clear.

Improved, more rigorous high school curricula obviously have a bearing on college admissions and curricula. We all know that the number of students available to go on to college is shrinking. We all know we have come through a period of about 15 years in which some colleges overbuilt, and in which the necessity to maintain the normal health of the college plant required an ever-increasing student flow. Obviously, we are entering a phase in which not all institutions will be able to maintain this kind of flow.

We're also entering a period in which most college faculties are not willing to define their terms with students. There is a kind of reluctance in college faculties to teach lower division courses; or if they are taught, to address them as serious parts of the academic curriculum. At the same time colleges enroll large numbers of students who are clearly not qualified to do the work that is required for a degree, yet place token priority on remedial work. This attitude is one that clearly cannot survive if colleges are to exert the kind of influence on schools that the SREB report on quality calls for and common sense demands.

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